

FIG. 1

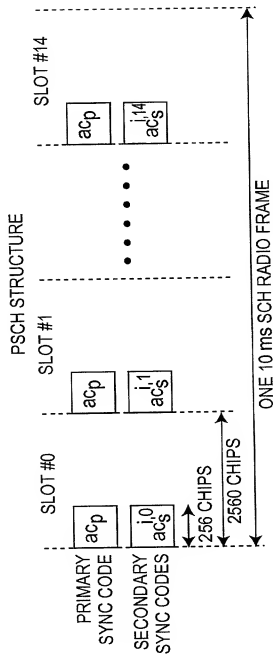


FIG. 2

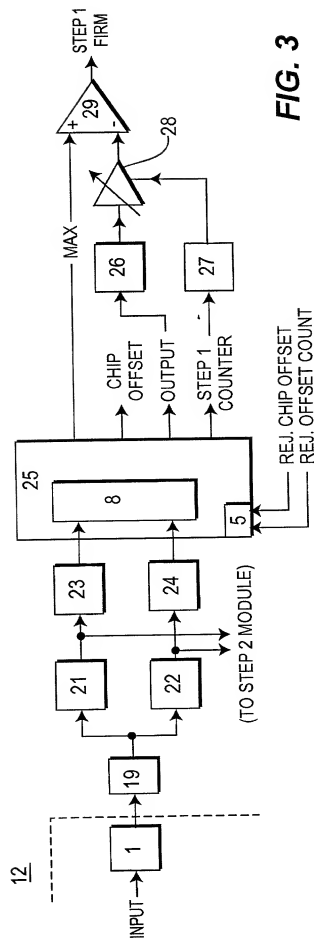


FIG. 3

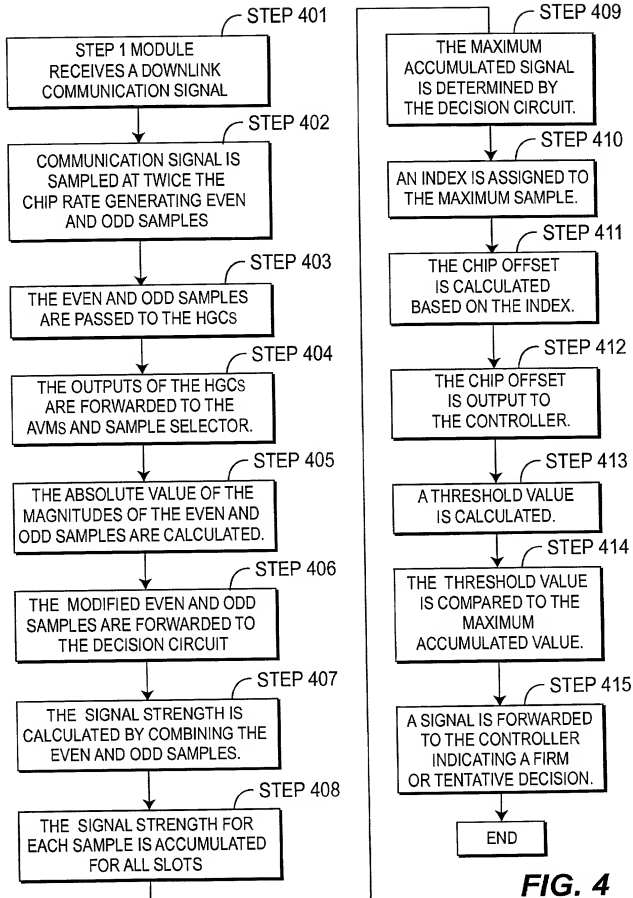
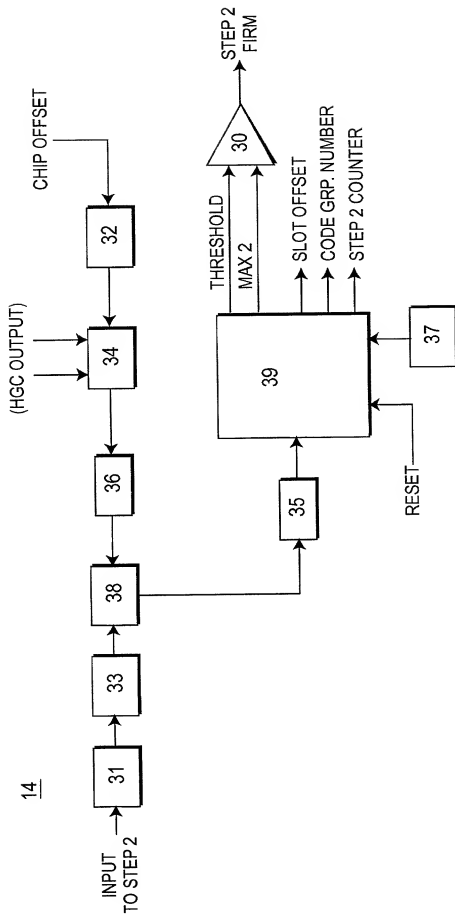
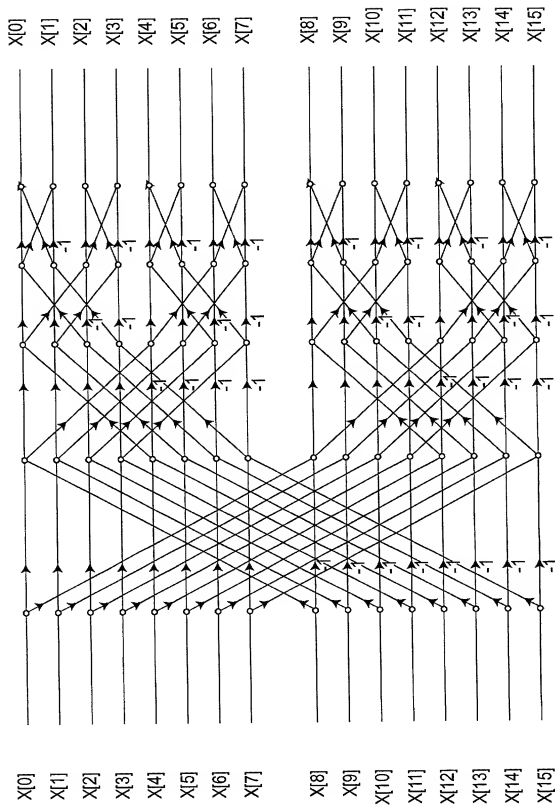


FIG. 4

**FIG. 5**



FAST HADAMARD TRANSFORM STRUCTURE

FIG. 6

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$$\text{INPUT MATRIX} = \begin{matrix} & \text{ELEMENTS OF FHT OUTPUT} \\ \begin{bmatrix} x_{1,1} & x_{1,2} & \cdot & \cdot & \cdot & x_{1,16} \\ x_{2,1} & x_{2,2} & \cdot & \cdot & \cdot & x_{2,16} \\ \cdot & \cdot & x_{i,j} & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ x_{15,1} & x_{15,2} & \cdot & \cdot & \cdot & x_{15,16} \end{bmatrix} \end{matrix} \quad 15 \times 16$$

$i = 1, 2, 3, \dots, 15$ SLOTS

$j = 1, 2, 3, \dots, 16$ ELEMENTS PER SLOT FROM HGC OUTPUT

FIG. 7

$$\text{CODE GROUP MATRIX} = \begin{matrix} \text{(KNOWN MATRIX)} \\ \begin{bmatrix} 1 & 1 & 2 & 8 & \cdot & \cdot & \cdot & 15 & 7 & 16 \\ 1 & 1 & 5 & 16 & \cdot & \cdot & \cdot & 14 & 12 & 10 \\ \cdot & \cdot & \cdot & \cdot & x_{i,j} & \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ 9 & 12 & 10 & 15 & \cdot & \cdot & \cdot & 12 & 16 & 10 \end{bmatrix} \end{matrix} \quad 64 \times 15$$

$i = 1, 2, 3, \dots, 64$ GROUPS

$j = 1, 2, 3, \dots, 15$ SLOTS

$x_{i,j}$ = S-SCH CODES. ONE OUT OF 16 PER SLOT.

FIG. 8

$$\text{CORRELATION MATRIX} = \begin{matrix} \begin{bmatrix} c_{0,0} & c_{0,1} & \cdot & \cdot & c_{0,14} \\ c_{1,0} & c_{1,1} & \cdot & \cdot & c_{1,14} \\ \cdot & \cdot & c_{i,j} & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \\ c_{63,0} & c_{63,1} & \cdot & \cdot & c_{63,14} \end{bmatrix} \end{matrix} \quad \text{PER FRAME} \quad 64 \times 15$$

$c_{i,j} = \sum_k \text{INPUT MATRIX } [k][\text{CODE GROUP MATRIX}[i][k]]$

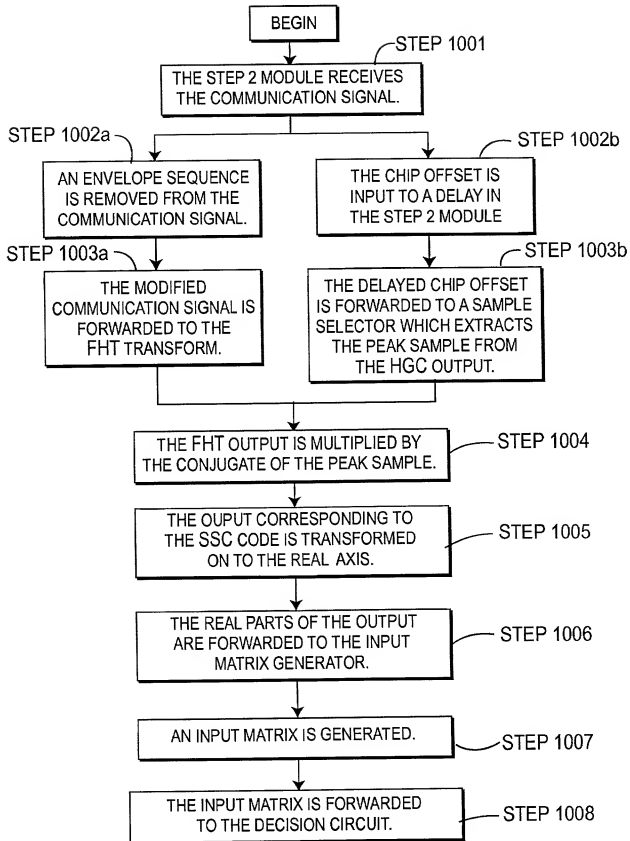
$i = 0, 1, 2, \dots, 63$ GROUPS

$j = 0, 1, 2, \dots, 14$ CYCLIC SHIFTS RESPECT TO COLUMNS (SLOT OFFSETS).

$k = 0, 1, 2, \dots, 14$ SLOTS PER FRAME.

FIG. 9

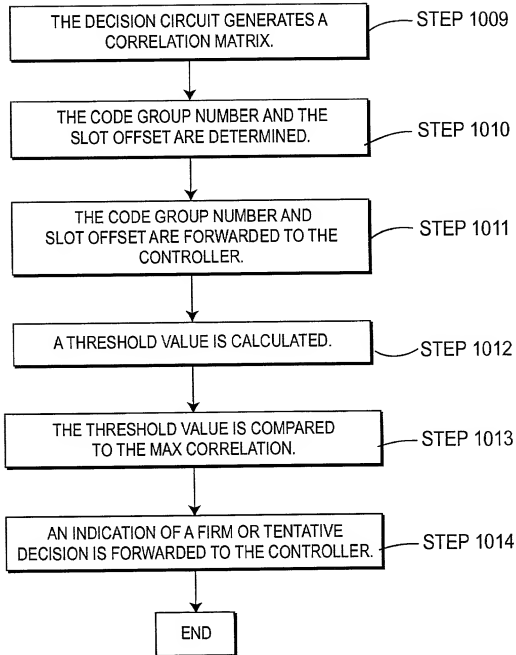
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(CONT'D ON FIGURE 10B)

FIG. 10A

10083796.022702

**FIG. 10B**

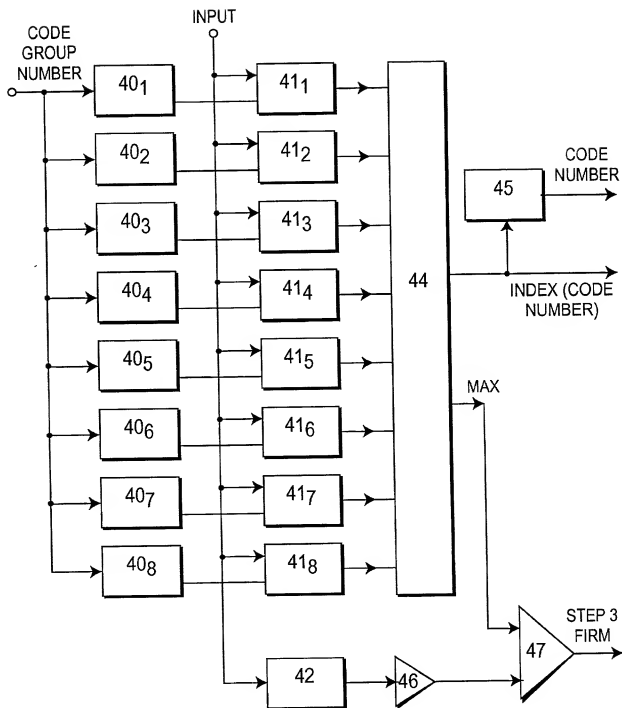


FIG. 11

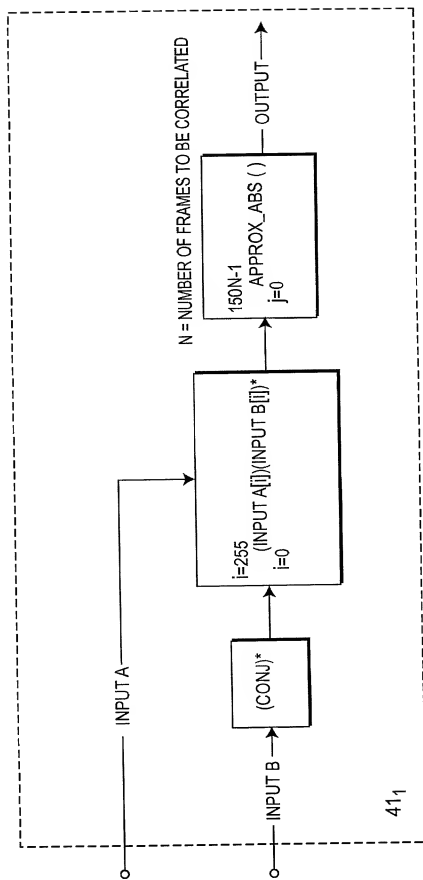


FIG. 12

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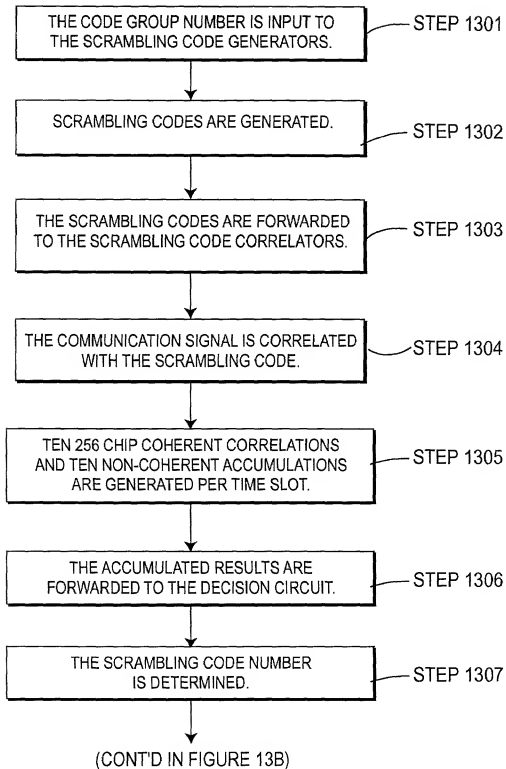
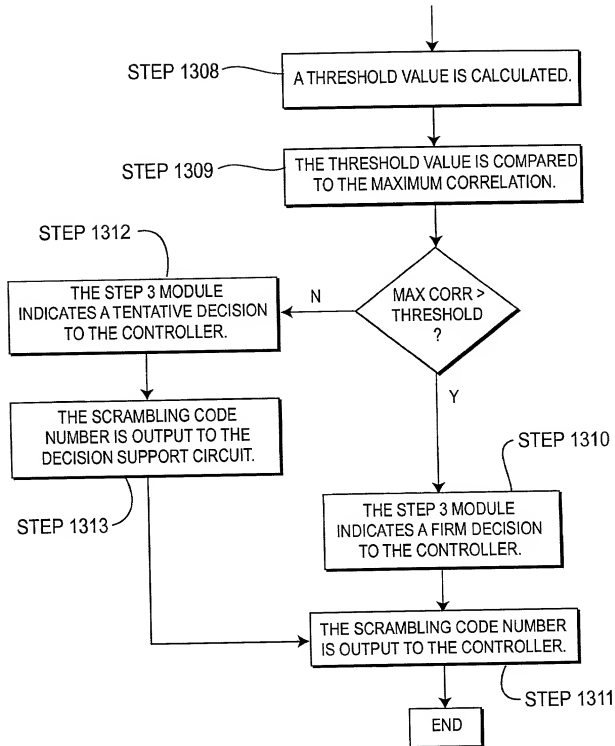


FIG. 13A

**FIG. 13B**

202220.9628001
10083795.022702

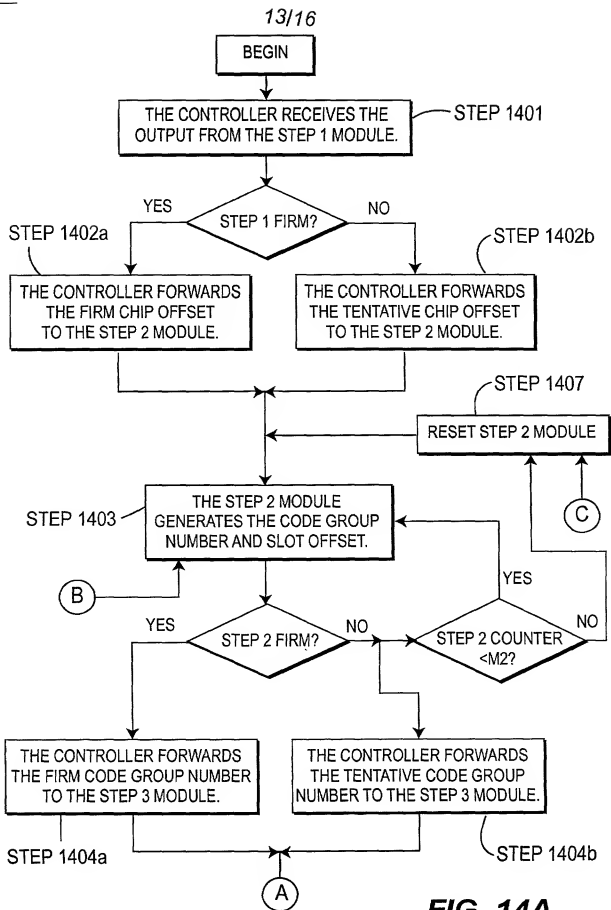
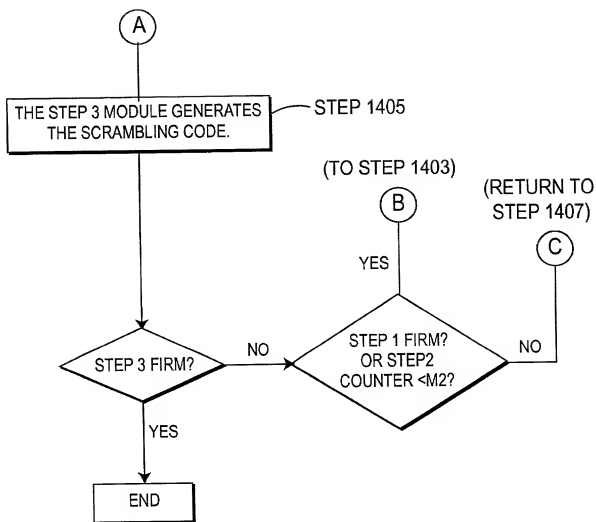


FIG. 14A

**FIG. 14B**

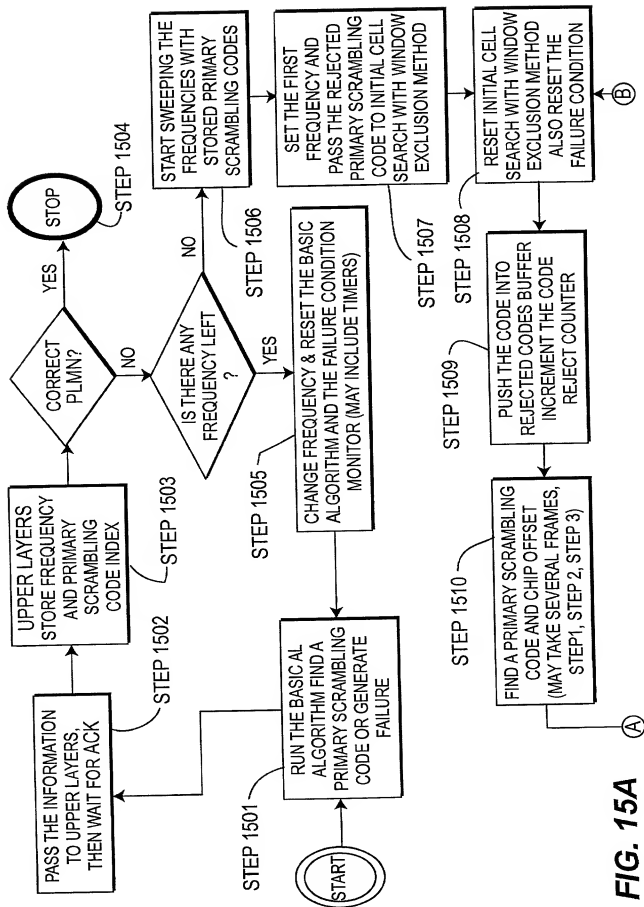


FIG. 15A

